

# **Office of Science (SC)**

## **System Development Policies**

### **Introduction**

The information management process used by the IM Team to deliver new IM capabilities to the Office of Science begins with identification of IM products and services needed to support SC business activities. A five-year Strategic Plan is developed and an Operating Plan defines the products and resources needed to deliver services included in the first year of the Strategic Plan. System Development implements these Plans by involving the user in defining business requirements in detail and then building the required system. Systems are developed based on a detailed project plan and using an iterative approach that ensures that the completed system does, in fact, meet business needs.

### **Policy 1. Joint/Rapid Application Development Process**

1.1. The IM Team uses the Joint Application Development / Rapid Application Development Process (RAD) to provide the IM capabilities needed by the SC user community. This process breaks the development of a system into cycles during which an initial prototype is developed based on customer definition of business requirements. Based on user feedback, that prototype is then goes through several cycles of coding, review by the users, and testing until a complete system is produced.

1.1.1 Initial interaction with the users to define business requirements takes place in Joint Application Development (JAD) sessions. The term “Joint” refers to the team approach used in the early stages of a project whereby the developers and users work together to ensure understanding of requirements.

1.1.2. Based on the JAD session and follow on analysis by the developers, a Beta 1 (pre-code prototype) is produced which captures the overall idea without being too cluttered with detail. BETA 1 is a paper prototype that provides the user with the user interface and basic screen flow.

1.1.3. The users review this working prototype and provide feedback in the form of new requirements as well as modifications to existing requirements. This approach helps to ensure that the software will be correct by successively building portions of the system and soliciting user feedback. Beta 2 builds upon the foundation provided by Beta 1 to provide working code including some business roles, user interface functionality, data verification and data updates to the proposed data model for the system. BETA 2 is a working version of the system provided to the JAD participants for review and testing. It is also seen by other appropriate business users.

1.1.4. Beta 3 is a pre-production level model that contains any changes identified in Beta 2 as well as any missing functionality requested by the users in the final detailed

design phase. It provides real user data for testing. This is provided to JAD participants, business users, and business system testers for final review prior to a production build that will be used in training and rollout to the users.

## **Policy 2.     Architecture-Based System Development Standards**

2.1.   All system development projects are in compliance with the SC IM data, applications, and technology architectures.

2.2.   All aspects of system development will comply with documented SC development standards (e.g., definitions, coding standards, development tools, database standards, testing procedures).

## **Policy 3.     Project Plans**

3.1.   The milestones, schedule and resources for each system development project will be documented in a project plan based on a uniform template to ensure consistency. The individual project plans will be part of an overall integrated schedule for all products and services to be delivered by the IM Team during any fiscal year.

3.2    These project plans are living documents used to manage the project and report status to management. They will be revised as necessary to reflect unanticipated changes in resources and user requirements.

3.3    Project plans will also be used as tools to communicate requirements to other elements of the IM Team to ensure that other IM elements critical to the success of System Development projects are available on schedule (e.g., technology infrastructure, independent testing, training).

## **Policy 4.     System Development Testing and Turnover to Production**

4.1    Quality control and testing occurs throughout the System Development process. Tools for version control and defect tracking are in place. Coding tests, reviews, and inspections are scheduled prior to each Beta release for user review.

4.2.   Projects that are completed and ready to go into daily use (i.e., production), are then turned over to the IM Team's Application Integration and Management (AIM) group where they go through a rigid integration process to ensure the delivery of a quality product to the user. When AIM is certain that the system is working properly, independently and in conjunction with other systems, and the existing IM technology infrastructure, AIM will train the users and turn over the system to the IM Team Production group for day-to-day operation.